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Motion of nematic and chiral actively driven objects

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We report on the dynamics of two different types of actively driven objects. The first ones are nematic in the sense that they only propel along one preferred body axis, but they stochastically switch the direction of motion along this axis [1]. Theoretical progress concerning both velocity and displacement statistics is achieved by mapping the situation to dry, solid friction with negative friction parameter. The second class consists of objects performing discrete stepwise motion with bent trajectories, while simultaneously they try to reach a remote target [2]. This minimal combination is sufficient to provoke rich nonlinear dynamics, including period doubling and chaotic behavior.

[1] A. M. Menzel, J. Chem. Phys. **157**, 011102 (2022).

[2] A. M. Menzel, resubmitted.